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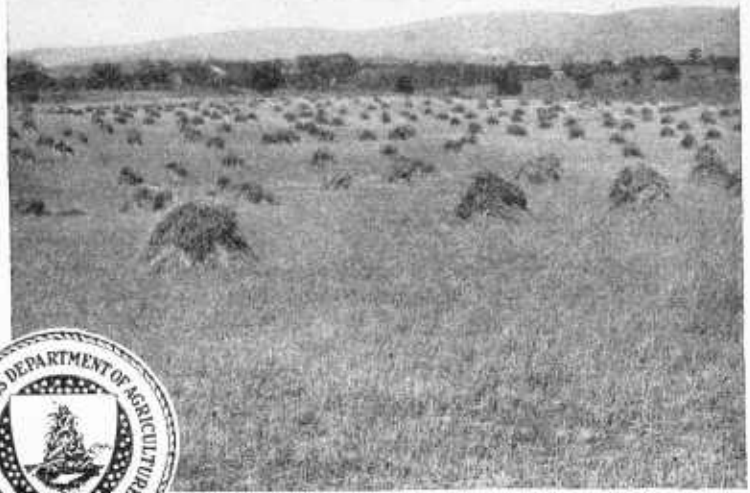
WHEAT GROWING IN THE SOUTHEASTERN STATES



THE FARMERS in the six Southeastern States—Tennessee, North Carolina, Mississippi, Alabama, Georgia, and South Carolina—may diversify their crops and provide home-grown bread by growing wheat on land suitable for the crop.

Wheat will furnish much pasture for stock in the fall and winter and may be used as a hay crop.

The sandy loam, silt loam, loam, and many of the clay soils when well drained and fertile are suited to wheat production. The lighter sandy soils, especially in the coastal plain, are better adapted for rye.

It is necessary to apply fertilizers to most of the southern soils, phosphorus being the principal element needed. Lime is also generally necessary for the best results.

Wheat should be grown only in rotation including legumes and cultivated crops.

Make the seed bed a fit place for the seed.

Fan and grade all seed before sowing, to remove trash and weed seeds, and treat with copper carbonate when the seed is infected with smut.

Soft red winter wheats are best, considered from all standpoints.

Home-grown seed should be used when it can be secured.

Late sowing is the most practicable and effective method of controlling the Hessian fly, but good farm practice is necessary for the best results when wheat is sown late.

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WHEAT GROWING IN THE SOUTHEASTERN STATES

By CLYDE E. LEIGHTY, formerly *Principal Agronomist, Division of Cereal Crops and Diseases, Bureau of Plant Industry*[1]

CONTENTS

THE WHEAT AREA

THE growing of bread grains in the six Southeastern States—Tennessee, North Carolina, Mississippi, Alabama, Georgia, and South Carolina—should be encouraged, as it leads to crop diversification and provides home-grown bread. Florida is not included, because wheat is not adapted to that State and is not successfully grown in it.

In connection with the production of bread grains in this section attention must be given to the milling facilities. Local mills must be available or it will be necessary to ship out the grain raised and ship in the flour.

ACREAGE AND YIELD

The average annual acreages of wheat harvested in these six States in the 10-year period 1920–1929 were as follows: Tennessee, 426,000; North Carolina, 507,000; Mississippi, 5,700; Alabama, 11,000; Georgia, 122,000; South Carolina, 9,000.

The average yields per acre in bushels for the same years were as follows: Tennessee, 10.5; North Carolina, 11; Mississippi, 15.6; Alabama, 10.6; Georgia, 10.3; South Carolina, 11.4.

SOILS ADAPTED TO WHEAT

Wheat does best on well-drained loam, silt loam, and some of the clay soils. Light, sandy soils and heavy, poorly drained clay soils

[1] Now principal agronomist in charge, Division of Dry-Land Agriculture, Bureau of Plant Industry.

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are not desirable for wheat. Since there is so much sandy land in the coastal plain, wheat is not a crop that can be generally grown there. On the heavier types of sandy loam soils in the coastal plain, however, good wheat yields can be obtained. Rye is a better crop than wheat on the light, sandy lands. The Piedmont and mountainous sections of the Southeastern States contain much good wheat-land.

Wheat should not be sown on land the drainage of which is poor. If the land is subject to overflow or if water stands on it after rains, wheat should not be sown, for the plants will not live and thrive on such land. Low places in fields can often be drained sufficiently to prevent injury from standing water by opening furrows in the direction of the natural slope. An excessive amount of water in the soil is liable to result in winterkilling. A soil to be good for wheat should contain plenty of vegetable matter and plant food and should not be acid.

FERTILIZERS

For soils that are not in a good state of fertility for wheat the following application of fertilizer per acre, applied when the grain is sown, will be generally profitable:

Superphosphate (acid phosphate), 250 pounds; potash salts, 25 to 50 pounds; nitrate of soda, 25 pounds; applied when the seed is sown.

Nitrate of soda, 75 to 100 pounds; applied after growth starts in the spring, generally early in March.

In place of these applications a 3–10–3 fertilizer—that is, one containing 3 per cent of nitrogen, 10 per cent of phosphorus, and 3 per cent of potassium—may be used. Of this, 150 to 250 pounds per acre on the richer lands and 250 to 350 pounds on the poorer lands may be applied when the wheat is sown. If some other formula of about the same composition is more readily obtainable, it may be used. The principal requirement is a large amount of phosphorus and smaller amounts of the other elements.

Most of the southern soils are acid and are benefited by an application of lime either as slaked lime or as ground limestone. Lime can be applied through the grain drill or lime spreader, preferably several weeks before the seed is sown. It may also be scattered over the plowed land with a shovel and harrowed in. There are some waxy limestone soils in central Alabama and northeastern Mississippi, and limestone valleys in several States, which without lime are suitable for wheat if sufficient vegetable matter is incorporated in them. Nitrogen usually can be added most cheaply by growing legumes, such as velvetbeans, cowpeas, soybeans, the clovers, hairy vetch, and Austrian field peas. Phosphorus is generally deficient in southern soils and must be added as superphosphate, steamed bone, etc., or in a complete fertilizer.

The best fertilizer to build up the land in preparation for wheat is 5 or 6 tons per acre of barnyard manure, to each ton of which 40 to 50 pounds of superphosphate or rock phosphate (floats) is added before spreading. It is advisable to apply the manure to a preceding cultivated crop, such as potatoes or corn; otherwise a heavy growth of straw and consequent lodging may result. If green manure, such as cowpeas or clover, is plowed under, 200 to 250 pounds of superphosphate should be added per acre.

ROTATIONS

Wheat should be grown only in a rotation including legumes and cultivated crops. Local conditions should determine the rotation and the particular crop to be used. Wherever possible, wheat should follow some legume crop, such as cowpeas or soybeans, as better yields are obtained after these crops than after corn.

In the southern part of the Cotton Belt, where the boll weevil is a serious pest, the following rotation is giving good results:

First year: Cotton. The cotton stalks plowed under early and wheat sown.
Second year: Wheat, followed by cowpeas or soybeans to be cut for hay.
Third year: Corn and velvetbeans. Beans and cornstalks pastured and turned under in early spring for cotton.

Good farm practice under boll-weevil conditions requires that the cotton stalks be plowed under as soon as the bolls are all open and picked, care being taken to cover the stalks completely in order to destroy the insects. The land should not be harrowed but should be gone over with a roller and the wheat sown with a disk drill.

When velvetbeans are grown with corn, which is the common practice in much of the southern half of the Cotton Belt, wheat can not be sown in the standing corn; neither can the crop be removed in time for fall seeding. It is necessary, then, that wheat follow some other crop than corn. Fortunately, better yields of wheat can be expected following cotton than after corn.

For the northern part of the Cotton Belt the rotation may be as follows:

(1) Cotton, with crimson clover sown at the last cultivation, or hairy vetch or Austrian field peas sown in cotton middles in September or early October and plowed under the following spring.
(2) Corn, with cowpeas sown between the rows at the last cultivation.
(3) Wheat, followed by cowpeas, followed by rye, to be turned under in the spring. The cowpeas following the wheat crop may be cut for hay, or they may be disked in or plowed under as green manure.

In tobacco-growing sections wheat may follow tobacco in the rotation.

PREPARATION OF THE SEED BED

When wheat follows a cultivated crop that is removed sufficiently early, such as corn or tobacco, the soil can usually be prepared for seeding by the use of a disk and ordinary harrows. As soon as the crop is harvested the land should be gone over with the disk to prevent the growth of grass and weeds. A second disking, followed by harrowing, is given just before the grain is sown. A better seed bed can be prepared in this way than by plowing, and it takes much less time and work. If weeds are plentiful, plowing 3 or 4 inches deep may be necessary. Harrowing with an ordinary harrow should follow the plowing.

When wheat follows cotton the stalks should be plowed under as soon as the bolls are all open and picked. Plowing in this case should be deep enough to bury the stalks completely in order to destroy the boll weevil. The land should then be firmed with a roller and the wheat sown with a disk drill. Disking or harrowing is not advisable, as it unearths the buried stalks.

When wheat follows other than a cultivated crop, the seed bed should be prepared by plowing the land to a depth of 6 or 7 inches several weeks before seeding. It should then be harrowed at once and afterwards worked down with a harrow, disk, drag, or roller in such a manner as to kill all weeds that start to grow after rains and to settle the subsoil and keep the topsoil well broken up. Figure 1 shows disking and harrowing at a single operation. When it is necessary to plow just before seeding, as when a catch crop of cowpeas is plowed under, the soil should be compacted by rolling and harrowing several times before seeding. In any case, when it is time to sow the grain, a fine, mellow seed bed should be prepared, using the harrow or other tools if necessary.

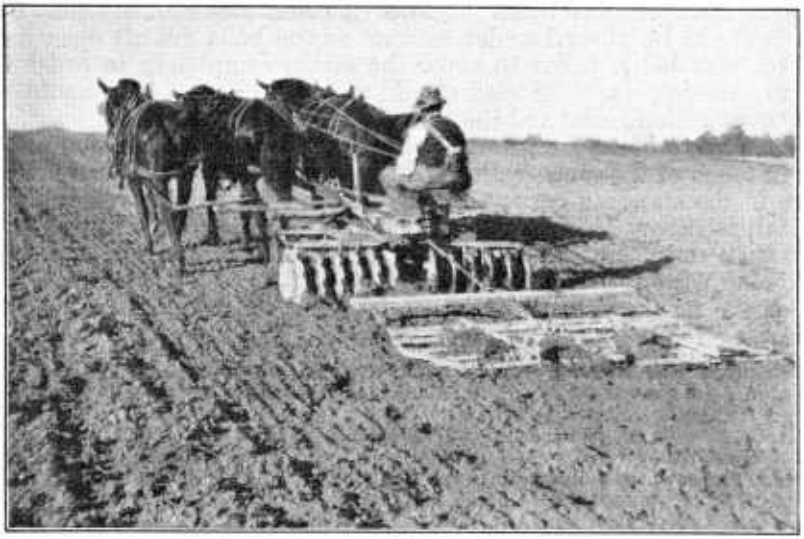

FIGURE 1.—Disking and harrowing land at a single operation

PREPARING AND SOWING THE SEED

PREPARATION OF SEED FOR SOWING

Only clean seed of an adapted variety should be used. Broken, immature, weevil-eaten, and shriveled grains, weed seeds, and all foreign material should be removed by fanning and grading the seed before it is sown. The fanning mill will also remove smut balls and many grains affected by scab, as these are lighter than the sound grain. On account of the many advantages from using clean seed, the fanning mill should be used generally. There should be at least one in each community. If individuals find the cost too high, several farmers may often find it desirable to own a mill in common. Wheat prepared for sowing is shown in Figure 2.

Where stinking smut is present, seed wheat should be treated with copper carbonate.

Reliable seed dealers can generally furnish good wheat seed, or, better still, good seed can often be obtained of a local grower who is a

member of the State crop-improvement association. Officers of the State agricultural experiment stations and county agents can usually refer growers to sources of good seed.

METHOD OF SOWING

After a good seed bed is prepared, the properly fanned and treated seed should be sown about 1½ inches deep with a grain drill, if such an implement is available. The drill rows should be from 6 to 8

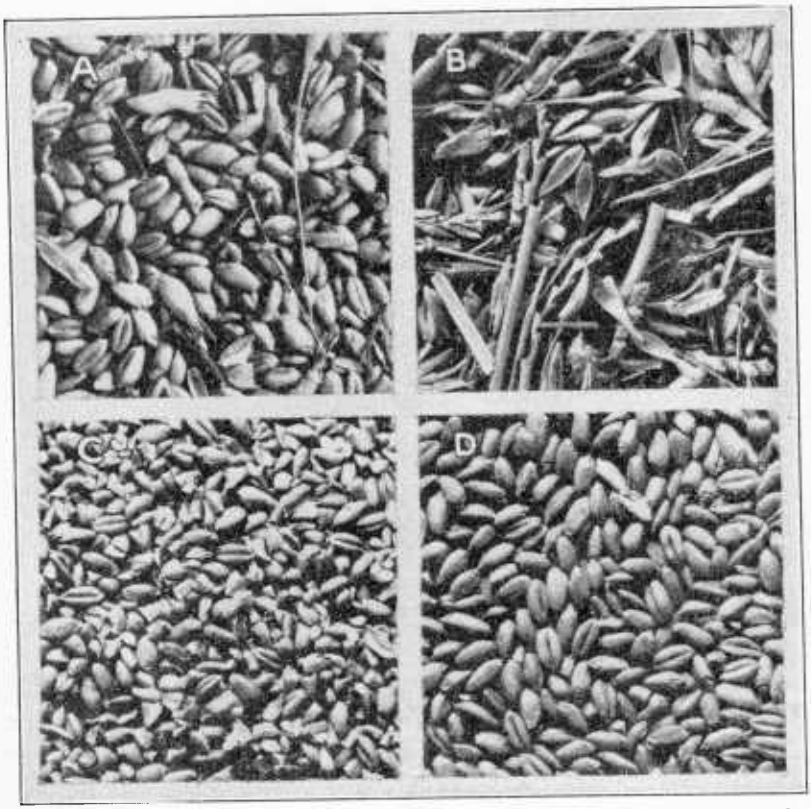

FIGURE 2.—Preparation of seed wheat: A, Original grain containing weed seeds, foreign material, and smut balls; B, coarse material; C, small weed seeds and broken and small-sized wheat kernels removed in cleaning; D, seed wheat after cleaning and dusting with copper-carbonate dust

inches apart. The same drill that is used for seeding oats or barley can be used for wheat. A disk drill, shown in Figure 3, is preferable to the hoe or shoe drill where weeds and trash cover the land or where cotton stalks are plowed under. Such material is less likely to clog and be uncovered by the disk drill. On clean land, however, any kind of a drill may be used. By the use of a drill the seed is covered uniformly and placed in contact with moist soil, where it will germinate readily. Many experiments have shown that better results are obtained by sowing with a drill than by sowing broadcast.

When a drill is not available, however, wheat may be sown broadcast over the field from a 2-bushel bag slung over the shoulder and under one arm. The sown seed should then be covered by harrowing with an ordinary harrow. The use of broadcast seeders would lighten this labor, but such implements are almost unknown in the South. The man sowing the grain saves much labor and can sow more evenly and rapidly if he scatters the seed while standing or sitting in the rear end of a wagon being drawn slowly back and forth across the field. About one-fourth more seed should be sown broadcast than if drilled, as more seed is wasted.

FIGURE 3.—A disk drill in operation

TIME OF SOWING

Wheat can be sown in the Southeastern States over a rather long period, extending from the latter part of September in the uplands of Tennessee and North Carolina to the latter part of November near the Gulf. The best time for seeding is about October 1 in the northern part and November 15 in the southern part. It will be necessary to delay seeding until about the average date of the first killing frost where the Hessian fly threatens. There is a further discussion of time of seeding in connection with the statements on the Hessian fly. (See p. 7.)

A good growth of the plant is necessary before cold weather begins, yet if the plant becomes jointed injury from freezing may result. If seeding is delayed until very late in the winter, sufficient winter growth is not secured and hot summer weather may injure or destroy the crop.

RATE OF SOWING

The quantity of seed that should be sown under ordinary conditions is 6 pecks per acre. This may be varied according to the size of kernel of the variety used, the condition of the seed bed, the fertility

and character of the soil, and the date of seeding. When a drill is used for sowing and the grains are small, the seed bed in good condition, the soil rich, warm, and well drained, and the seeding early, 5 or even 4 pecks per acre are often sufficient. When the seed is sown broadcast and opposite conditions exist, 7 or 8 pecks may give more profitable results. It is advisable to adhere to these rules with all varieties, regardless of any claims of exceptional tillering ability that may be made.

VARIETIES

A variety that has been grown locally for several years and has become adapted to the locality is generally the best. The soft red winter wheats are best, considered from all standpoints, although the soft white winter wheats (not the Pacific coast white wheats) of the Northeastern States are well adapted. Beardless smooth-chaffed varieties of red wheat (fig. 4), such as the Fultz, Purplestraw, Bluestem (not the Spring Bluestem), Georgia Red, Leap Prolific, Red May, Redhart, and Currell, or bearded smooth-chaffed varieties (fig. 5), such as Fulcaster, Dietz, and Red Wonder, may be grown with the greatest chance for success. The hard red winter wheats, such as Turkey and Kharkof, should not be sown in the South. The spring wheats of the upper Mississippi Valley may come through the winter, but are not well suited to this section. The durum wheats also are not suitable for this section.

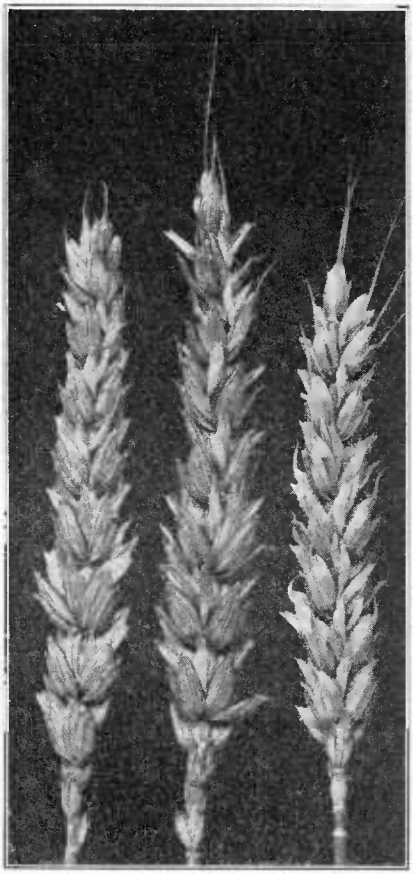

FIGURE 4.—Three beardless wheats (left to right)—Fultz, Leap, and Purplestraw

PESTS OF THE WHEAT CROP

INSECTS

HESSIAN FLY

The Hessian fly is a destructive pest of the wheat crop in some parts of the Piedmont and mountainous sections of the Southeastern States. It does not seem to have reached the coastal plain. Where this insect is present it is advisable to take precautionary measures to prevent injury by it.

The Hessian fly, being found in the "flaxseed" stage in wheat stubble and in unharvested wheat from June till September, or even

October in the South, can be destroyed or its damage prevented by carrying out the following methods of control:

(1) When the fly threatens do not sow wheat until after a fly-free date, which is approximately October 10 for the northern boundary of Tennessee and North Carolina, October 20 for the southern boundary of these States, and October 27 for all places having the approximate latitude of Atlanta.

(2) Where possible plow under deeply all stubble and ruined wheat fields immediately after harvest in order to bury the "flaxseeds," so that the flies can not emerge. Such land can be sown at once to cowpeas or soybeans if desired.

(3) Harrow, disk, pasture, or otherwise effectually prevent the growth of all volunteer wheat.

(4) As a measure preparatory to sowing wheat, plow as early and deeply as existing conditions will permit; disk, harrow, and roll until a thoroughly pulverized, compact seed bed is obtained.

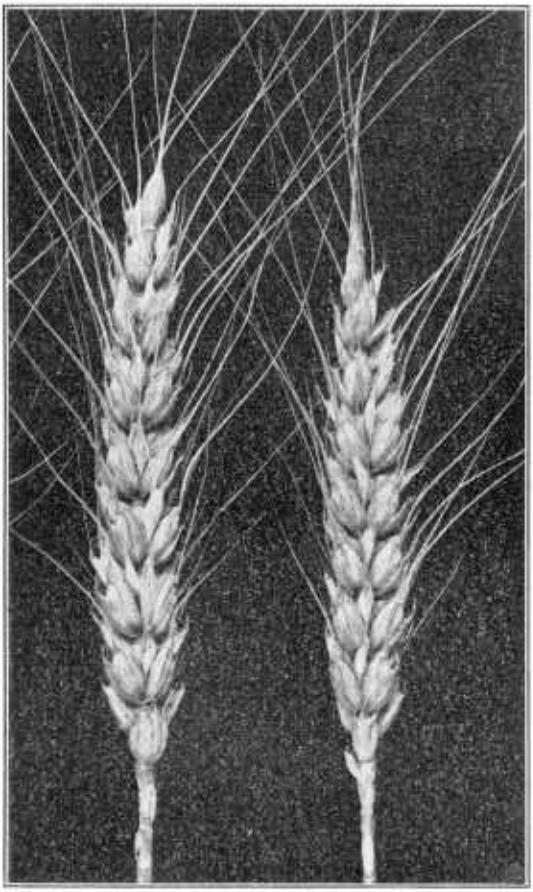

FIGURE 5.—Heads of Fulcaster, a bearded wheat

Where stubble fields can not be cultivated because of seedings of clover or grass, the only practicable method that the farmer can use is that of delaying his wheat sowing until the flies have made their way from the stubble to the fields and died there without being able to find any plants upon which to deposit their eggs. Late-sown wheat is also less liable to be injured by fall infections of rust.

The most serious objection to the most practicable and effective method that can be employed to control this pest in the field—namely, late sowing—is that there is danger of so delaying the growth of the plants that they do not become sufficiently advanced to enable them to withstand the winter. The ill effects of late sowing can be largely avoided by good farming practices. The most practicable and effective methods of controlling the Hessian fly are identical with the best methods of producing the maximum yields of wheat. It is perfectly possible for the farmer to fight the Hessian fly by the process of good farming, involving thorough cultivation, good seed, and a rotation of crops, and by the application of fertilizer containing readily available plant food along with the grain at the time of sowing.

INSECTS INJURIOUS TO STORED GRAIN

The most serious damage to wheat in shock, stack, or bin is done by the Angoumois grain moth and the black weevil.[2] These insects may be destroyed in grain stored in bins or barrels by the use of liquid carbon disulphide.

Place the grain in air-tight bins holding 30 to 40 bushels. Place 1 pound of carbon disulphide in a shallow vessel on top of the grain and cover the top of the bin as tightly as possible. The liquid readily vaporizes, and the fumes, being heavier than air, pass down through the grain, destroying all insects. This method is most effective when the temperature is above 75° F.

FIGURE 6.—A, Sound head of wheat; B, bunted head

DISEASES

SMUTS

The smuts are common diseases of wheat in the Southeastern States. There are two of them, stinking smut, or bunt, and loose smut. (Figs. 6 and 7.) They can be distinguished easily, since stinking smut has a distinct, disagreeable odor which can be recognized in the threshed grain, while loose smut does not have such an odor. Stinking smut when present forms smut balls, consisting of a compact mass of dark-brown spores within a thin, gray membrane. When these smut balls are crushed, only a dark-colored, dustlike material remains. In heads affected by loose smut the kernels are entirely destroyed, and there is left in the field just before harvest only the rachis or central stem of the head.

Usually loose smut of wheat does not cause much loss, but sometimes losses from it are rather heavy. It is not unusual to find 5 to 10 per cent of the heads in a field destroyed by it.

Loose smut can not be controlled by chemicals, but can be controlled by hot-water treatment. The hot-water treatment, however, is difficult to apply and is not generally practicable for farmers to use.[3] Some farmers get rid of loose smut by treating enough seed

[2] Detailed information concerning these pests and complete directions for destroying them are contained in Farmers' Bulletin 1483.

[3] Directions for treating seed wheat with hot water are given in Farmers' Bulletin 1540, Smuts of Wheat and Rye and Their Control.

to sow a seed plot an acre or more in size, separated some distance from other wheat. If the treatment is properly done, the grain from this plot will be free from loose smut and will produce a crop free of this smut the next year.

FIGURE 7.—Loose smut of wheat as it appears in the field about two weeks before ripening

Stinking smut, or bunt, causes large losses each year in reduced yield and in discounts at the market. Much of this loss can be prevented by treating the seed with copper-carbonate dust. This treatment is cheap, easy to apply, and does not injure the seed. Directions for using copper carbonate in treating wheat are as follows:[4]

Thoroughly clean the seed with a fanning mill to remove smut balls. Use 2 to 3 ounces of copper carbonate to a bushel of wheat. The copper carbonate must be spread evenly over every kernel. This is best done by thoroughly mixing the grain and the dust in a tight commercial or homemade mixer. Such a mixer can be made of a 30-gallon oil drum or a 30-gallon or 40-gallon barrel mounted on a frame by means of an axle and provided with a handle for turning over and over in mixing, as shown in Figure 8.

Copper carbonate is poisonous, so treated seed must not be used for food or feed. Wear a mask over the nose and mouth when treating grain, and treat only in a well-ventilated place. To avoid breaking the grain drill used in sowing treated seed, turn the feed shafts with a wrench after the drill has stood overnight. Also oil the gear bearings frequently.

RUST

The disease most injurious to wheat and the factor that usually limits yields the most in the Southeastern States is rust. This affects

[4] Fuller directions for this treatment and descriptions of apparatus for treating seed are contained in Miscellaneous Circular 108, Copper-Carbonate Seed Treatment for Stinking Smut of Wheat, and Farmers' Bulletin 1540, both issued by the U. S. Department of Agriculture.

both stems and leaves, reddish and black spots forming on these parts. Its development is favored by dampness and heat. It is most destructive on low, damp land. Early-ripening varieties will generally be less affected than late varieties. There are no rustproof varieties for the South, but some are more resistant than others. Sowing on fertile, well-drained uplands and the use of early varieties are the most successful methods of combating the disease. Seed treatments are not effective in preventing rust.

WEEDS

Cheat, or chess, is often found in wheat fields and in the threshed grain. When present it lowers the quality of wheat for milling purposes. Cheat is not as easily winterkilled as wheat and will endure more unfavorable conditions. This has caused many people to believe that wheat turns to cheat. This is not true, for cheat grows only from cheat seed, usually sown with the wheat. The fanning mill will remove most of these seeds.

FIGURE 8.—Treating wheat with copper carbonate to prevent stinking smut (bunt), using a machine made from an oil drum fitted with axle and handle and also with a hinged tight-fitting door in the head

Wild onion or garlic is the worst weed pest in many southern wheat fields. It is very difficult to remove from the threshed grain and to eradicate from farms. Wheat containing onions is usually docked heavily. Bread made from garlicky flour, especially if eaten warm, has a pronounced odor and flavor. Avoid sowing wheat containing onion bulblets, and use every means to rid the farm of wild onions if they are already established.[5]

Cockle has black, rough seeds which have about the same diameter as wheat kernels. They can not be removed easily and are very injurious to flour. Special care should be taken to sow only seed free from cockle and to remove all plants that appear in wheat fields.

Peppergrass is another weed of southern wheat fields that should be guarded against. The seeds of this plant should be removed from the seed wheat before sowing by thorough fanning and grading.

[5] Methods of eradicating wild onions are given in Leaflet 43 of the U. S. Department of Agriculture.

USES OF THE WHEAT CROP

WHEAT AS A NURSE AND COVER CROP

Winter wheat as a nurse crop for clover and grass seedings is inferior to winter barley, but superior to winter oats. Winter barley matures earlier than wheat and does not grow so tall. Winter oats make too dense a growth, while spring oats, in addition to their dense growth, occupy the land a longer time. When used as a nurse crop the stubble should be left high, to furnish protection and support to the young grass and clover plants. The shocked grain should be removed as early as possible after cutting, to avoid injury to the seeding. A good stand of wheat is also a valuable cover crop, preventing the washing of the soil and the leaching out and loss of plant food and fertilizers.

PASTURING AND MOWING

It frequently happens in the Southern States that an overabundance of foliage is produced in the fall and danger of winter injury is increased thereby. It is often advisable under these conditions to mow off the plants in the fall or pasture moderately. As growing wheat is an excellent feed, it is more profitable to dispose of the excess growth in the late fall or early spring by pasturing. However, excessive pasturing at any time, pasturing when the soil is wet, and late-spring pasturing are very injurious and should be entirely avoided. Lodging can be reduced by judicious mowing or pasturing.

WHEAT AS A PASTURE AND HAY CROP

Wheat is a better crop for pasture on the heavier clay soils than rye, but rye is much better on the sandy soils. Wheat can be pastured more closely without apparent injury than oats or barley. If wheat is to be cut for grain, however, it should not be pastured late in the spring. Wheat is an excellent hay crop, but is inferior to oats. It is superior to rye for this purpose.

HARVESTING THE CROP

MANNER OF CUTTING

The self-binder is most generally used for cutting wheat in the Southeastern States. The old method of cutting with a cradle can be used on very rough land and for small patches where wheat is not an important farm crop. For very small patches a hand sickle may be used.

In recent years the combine [6] (combined harvester-thresher) has been introduced and is being used with satisfactory results where conditions are favorable. The advantages of the combine in comparison with other methods of harvesting and threshing are the saving of labor, the elimination of transient labor, the early clearing of fields for tillage operations, the distribution of the straw on the land, and getting of the grain to market earlier. The disadvantages are the large investment required, the large amount of power consumed,

[6] The combine is discussed in Farmers' Bulletin 1565, Shall I Buy a Combine?

the greater risk from damp grain, the greater risk to crops from storms, and the difficulty of saving the straw for feed and bedding. A combine should not be purchased for harvesting less than 100 to 150 acres of all crops each year. For smaller acreages other methods will usually be more economical.

TIME OF CUTTING

Wheat may be cut safely with a binder when the straw has lost nearly all of its green color and the grains are not entirely hardened. If cut sooner than this, shriveled kernels will result. Wheat that is fully ripe is difficult to handle with a binder. Where the area of wheat is large, cutting should begin as early as it can be done safely.

When a combine is used to cut and thresh the grain in one operation, the grain must be left standing until it is fully ripe. This will usually be about 7 to 14 days after it is ready to cut with a binder. Cutting should begin as soon as the grain is dry enough to store safely. Wheat usually should contain not more than 14 per cent moisture in order to keep well in storage. If the crop is harvested at the proper stage of maturity and dryness, the grain will be equal in quality and condition to that harvested and threshed by other methods.

SHOCKING

Wheat should be shocked in the field immediately after being cut and bound. A shock is begun by standing two bundles in a nearly upright position with heads together and butts sufficiently apart to prevent falling over. From 8 to 12, and sometimes more, bundles are then set up about these until a round shock of the proper size is formed. The number of bundles to place in a shock depends upon the degree of ripeness, the length of straw, and the size of the bundle, fewer bundles being used where the straw is short or not fully ripe In placing the bundles the butts should be jammed into the stubble to insure firmness and the heads should lean inward sufficiently to prevent falling over. When this part of the shock is completed it should be covered as perfectly as possible with two bundles, the heads of which have been broken down at the band, to form a cap. This cap should be placed so as to protect the standing bundles from rain and sun as much as possible. If the heads of the cap are placed on the side of the shock toward the prevailing winds, some protection against blowing off may be afforded. A good shock is shown in Figure 9.

STACKING AND STORING

Threshing directly from the shock is the most common practice in this section. This should be done as soon as the grain is dry enough to store. It is often advisable to protect wheat by stacking or storing it in the barn as soon as it is dried out in the shock. The cost of threshing from the shock is generally somewhat less than the cost of stacking or storing in the barn and threshing from the stack or barn. Better protection is afforded the grain by stacking or storing, which is very important when threshing can not be done soon after

cutting. A sweating process also takes place in the stack and barn, which improves to some extent the color, condition, and test weight of the grain and its milling and baking qualities. The additional cost, if any, resulting from stacking wheat is often offset by the better price received on account of the better quality. It is also possible in wet weather to thresh out the wheat more completely from the straw and to remove more of the chaff when stacking and storing are practiced.

Wheat in shocks or stacks or stored in barns may soon become infested with the Angoumois grain moth. This insect destroys the grain and sometimes causes severe losses. Prompt threshing is advisable wherever this moth occurs. The threshed grain when placed in the bin can be protected by treating the grain with carbon disulphide to destroy the insects.

FIGURE 9.—A shock of wheat

THRESHING

Threshing should not be attempted when wheat or straw is wet or tough, as good results can not then be obtained. Wheat can dry out much better in the head than after being threshed. If threshed wet and marketed immediately it is discounted heavily in price; if placed in a bin it is likely to become hot and badly damaged.

The wheat straw may be stacked in the open, stored in the mow, or spread at once over the field. When the price is good it may be sold. It should never be burned. Straw furnishes excellent roughage for livestock, and by using it for bedding in stalls a large part of the valuable liquid manure can be preserved. Rotted straw from an old straw pile or from straw spread directly on the field makes good manure, as each thousand pounds of straw contains on the average about 8 pounds of potassium, 5 pounds of nitrogen, and smaller amounts of other important plant foods. A thousand pounds of wheat grain removes on the average about 20 pounds of nitrogen and about 3½ pounds each of potassium and phosphorus.

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